

We also extend our gratitude to John Dickson of La Lima, Honduras for the opportunity to examine specimens in his personal collection and to Diana Dee Dugas for her help in gathering data.

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A NEW SPECIES OF ROCK DWELLING DENDROCHIROTE HOLOTHURIAN FROM CATALINA ISLAND

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ABSTRACT: A new species of the genus *Cucumaria* Blainville (1830) is described from Santa Catalina Island. It is a filter feeder and occurs abundantly nestled in subtidal rock reefs. It is distinct from other members of the genus described from the Pacific coast of North America in its coloration, spicule types, and internal anatomy.

An undescribed species of *Cucumaria* Blainville (1830) was found to be abundant in subtidal rock reefs at Santa Catalina Island (lat. 33° N—long. 119° W) which lies off the coast of southern California. The species is unique in its habit of nestling deep into rock crevices. These cucumbers differ greatly in size, color, internal anatomy and spicule types from other species of *Cucumaria* known from the Pacific coast of North America, namely *C. crax* Deichmann, 1940, *C. curata* Cowles, 1906, and *C. vegae* Theel, 1886. A description of the genus *Cucumaria* may be found in Deichmann (1941).

CLASS: HOLOTHUROIDEA

ORDER: DENDROCHIROTA

GENUS CUCUMARIA BLAINVILLE (1830)

Cucumaria salma, new species

Material: Holotype (AHF Echinoderm Collection No. 61), total length 6 cm (contracted) and 3 paratypes (AHF Echinoderm Collection) were collected at a depth of 14 m on the north face of Bird Rock.

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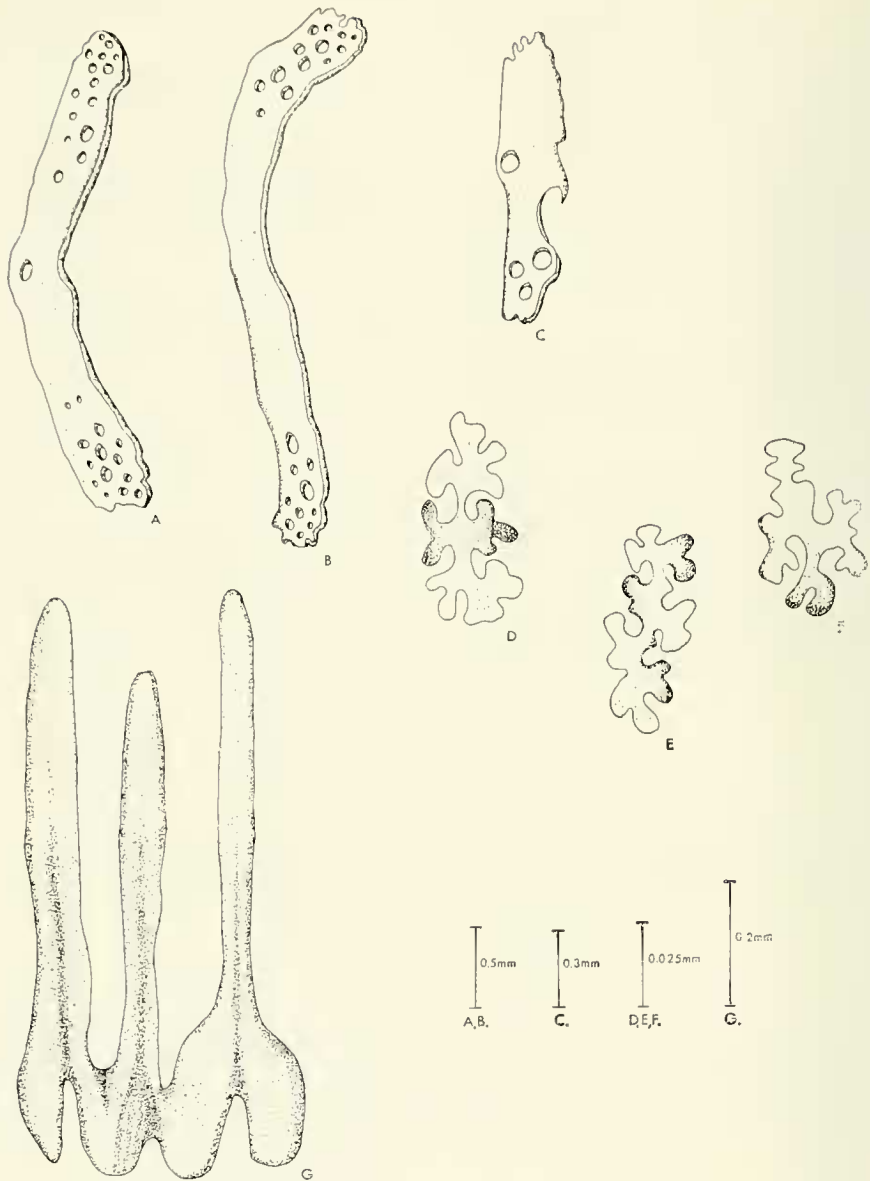


Figure 1. A, B, supporting rods from tentacles; C, perforated plates from tentacles; D, E, F, rosettes from tentacles; G, calcareous ring.

Santa Catalina Island. The animals were concealed in rock crevices and removed by use of a geologist's pick.

Description: Ten dendritic tentacles of equal size form a single circle bordering the buccal membrane. Retractable tube feet arranged in pairs along and restricted to the ambulacra. Ventral and dorsal ambulacra not differing markedly from each other.

Calcareous ring with distinct posterior projections and long anteriorly projecting processes (Fig. 1G); interradials and radials fused; anterior processes of

the radials distinctly cleft. Four Polian vesicles present. Three or four short stone canals, 3–4 mm in length grouped near the dorsal mesentery or more distantly spaced from each other on the ring. Each canal terminates in a slightly elongate madreporite.

Gonad composed of numerous elongated unbranched tubules united in one basal tuft attached to the dorsal mesentery. Gonoduct opens to exterior directly behind tentacles in central dorsal interambulacrum.

Spicules smooth, without knobs. Body wall spicules with two types of perforated buttons (Fig. 2F–H), and

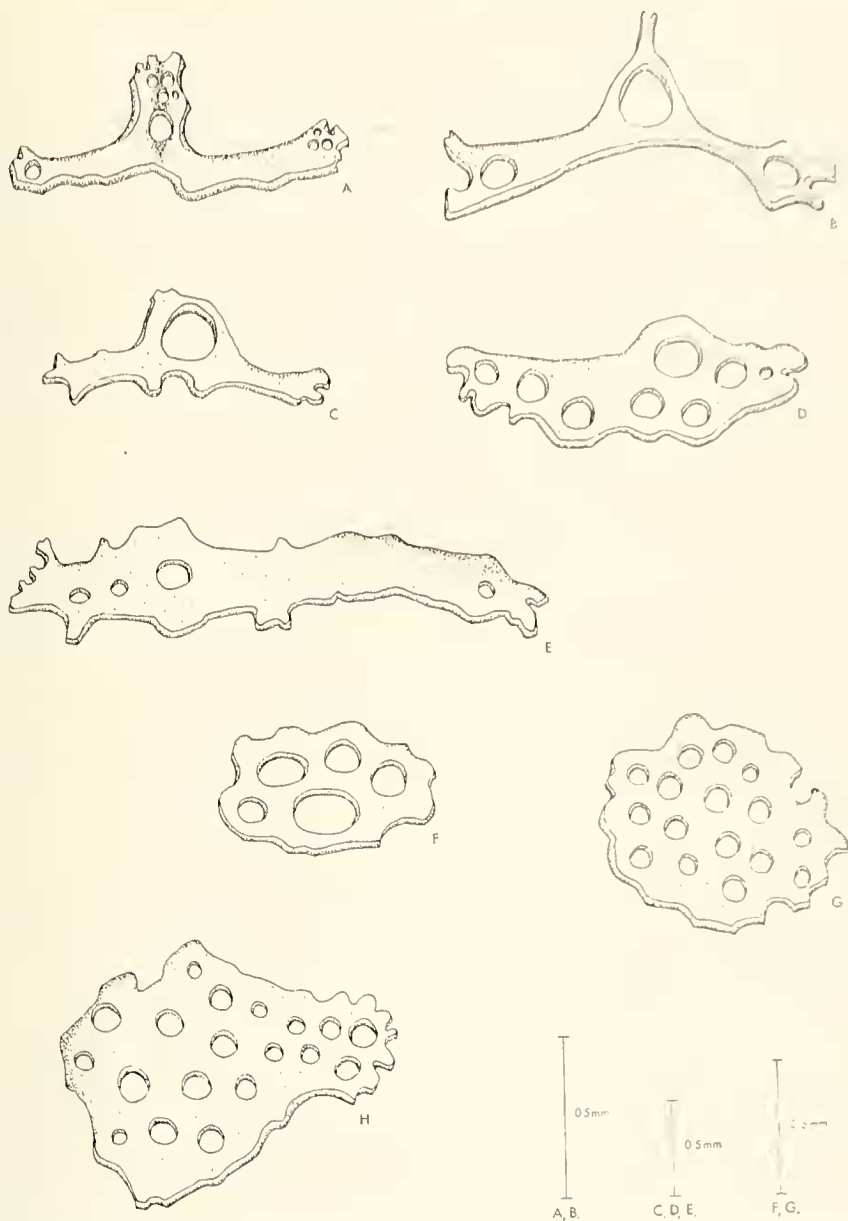


Figure 2. A, perforated three-armed rod from introvert; B, C, supporting rods from tube feet; D, E, perforated plates from tube feet; F, G, H, perforated buttons from body wall.

perforated rods (Fig. 3F), three-armed perforated rods (Fig. 3A, E), and perforated plates (Fig. 3B-D). Tube feet with a small number of slender supporting plates (Fig. 2D, E) and three-armed rods (Fig. 2B, C); when perforated usually a small number of openings. No indication of end plates. Spicules of introvert distinct from those of tentacles, resembling those of body wall, consisting of three-armed perforated rods and perforated plates (Fig. 2A). Tentacles with numerous large narrow rods with perforated ends

(Fig. 1A, B), smaller perforated plates (Fig. 1C), and very small rosette-like plates with irregular marginal processes (Fig. 1D-F).

Color: Primarily salmon with a concentration of black pigment toward the anterior end. Introvert, buccal membrane, and tentacles mottled with white and black patches of pigment; tentacular papillae black.

Measurements: Length of relaxed specimens about 10 cm.

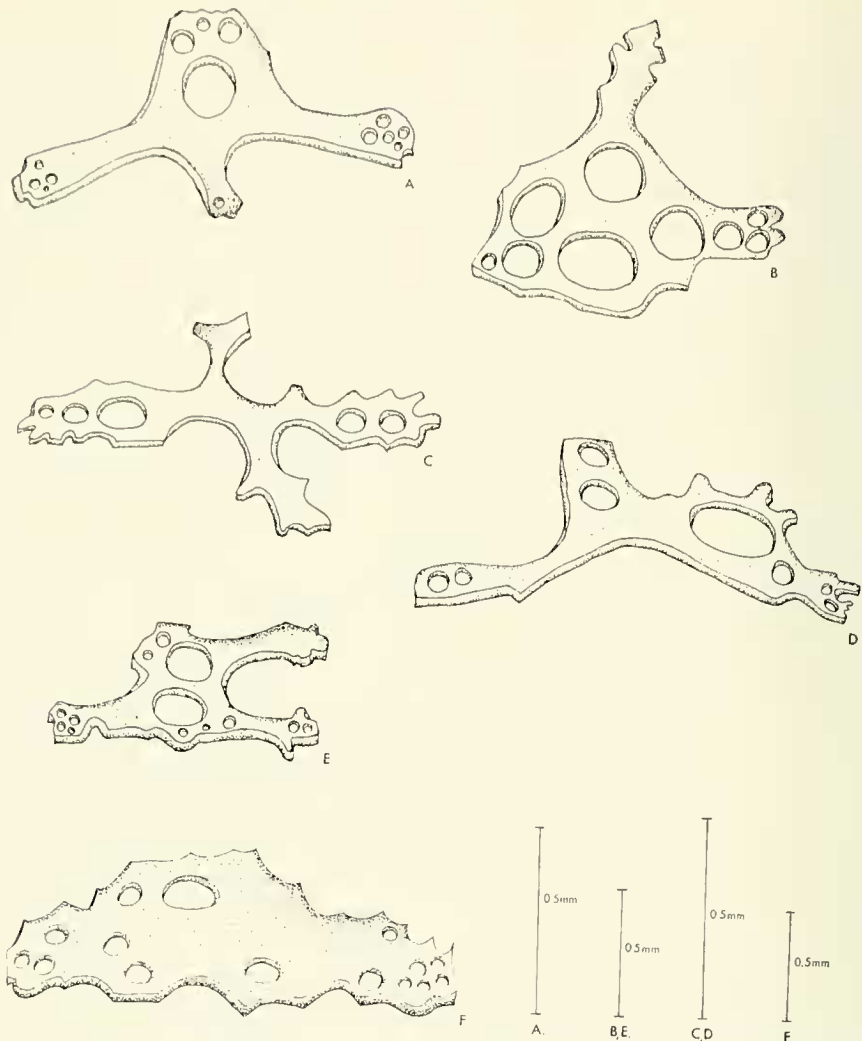


Figure 3. A, E, perforated three-armed rods from body wall; B, C, D, perforated plates from body wall; F, perforated rod from body wall.

Distribution: Known from Santa Cruz Island, Santa Barbara County (Given, pers. comm.) to Point Loma, San Diego County (Turner, Ebert, and Given, 1968). Occurs at depths of 3 to 20 m in rocky reefs.

Observations: The aborescently branching tentacles are highly retractile. The papillae on the tentacles project above the epithelium and are independently retractile. These papillae are adhesive and used to collect food particles.

The tube feet nearest the base of the tentacles can elongate to a length of 3 mm. Retracted holothurians utilize their tube feet to pick up particles from the substrate and to transfer them into the introverted oral end. When the tentacles are extended these anteriormost tube feet may also select

particles from the substrate and transfer them onto the tentacular papillae.

In the field the animals nestle in the rock crevices and extend their tentacles to catch suspended particulate matter. The body wall is extremely plastic, which permits the cucumbers to wedge themselves into crevices deeper in the rock and away from the rock face.

Remarks: *Cucumaria salma* [*salma* from Latin *salmo* = salmon] is suggested because of the principal color of the cucumbers.

Panning (1949, 1951, 1962) revised the genus *Cucumaria* and incorporated into other genera several of the species referred to by Deichmann (1941) from the Panamic region and by Clark

TABLE 1. Comparison of west coast species in the genus *Cucumaria*

<i>C. curata</i>	<i>C. crax</i>	<i>C. vegae</i>	<i>C. salma</i>
SIZE			
Up to 2.5 cm; ventrum flat	Small, 1.5 cm (contracted)	Small, 3.8 cm; ends tapered	Medium, 10 cm
TENTACLES			
Unequal	Equal, bushy	Unequal	Equal, bushy
TUBE FEET			
Few; double row in dorsal ambulacrum	Large; retractile; only in ambulacra	Double row; in interambulacra	Retractile; double row; only in ambulacra
CALCAREOUS RING			
Well-developed	Simple; post. prolongations	Slender; no post. prolongations	Post. prolongations; ant. processes w/cleft
STONE CANAL/POLIAN VESICLES/GENITAL PAPILLAE			
1/1/none	1/2/?	1/1/5	3-4/4/none
SPICULES-BODY			
Perf. buttons, 4, 6 holes, undulated margins; plates few, 20+ holes	Buttons, 4-8 marginal holes, not all entirely closed	Few, smooth rods, 1-3 holes in each end	Smooth perf. rods and buttons; plates
SPICULES-TUBE FEET			
No end plate; few supp. rods	Rudimentary end plate; three-armed supp. rods	Fragment of end plate, or none; no supp. rods; smooth plates w/undulating margins, varying no. of holes	No end plate; few supp. plates; three- armed rods w/few holes
SPICULES-TENTACLES AND INTROVERT			
Numerous supp. rods	Tent.; buttons intro.: numerous rods w/ perf. ends	—	Tent.: large rods w/ perf. ends; perf. plates; minute rosettes intro.: three- armed rods
COLOR			
Dorsum and tent. purple brown; vent. and oral disc yellow	Mottled brown body; ambulacra lighter; tent. black	Vent. yellow, gray; body ends brown	Body salmon; intro. and tent. mottled; tent. podia black
DISTRIBUTION			
Intertidal, rocks, mussel beds, central California	Sand, west coast Baja California-South America	Intertidal rock crevices, north Pacific coast	Rock crevices, 3-15 m deep, southern California

(1901a, 1901b) from the Pacific coast of North America as *Cucumaria*. Panning (1949) changed the species *C. dubiosa* Semper, 1868, to *Pseudocnus dubiosus* and in 1964 he changed *C. californica* Semper, 1868, to *Pseudocnus californicus*. Stimpson (1964) changed *Cucumaria populifera* to *Pentamera populifera* Panning (1949). Pawson (pers. comm.) suggests that *Cucumaria miniata* Brandt, 1835, *C. lubrica* Clark, 1901, and *C.*

piperrata Stimpson, 1864, do not belong in the genus *Cucumaria* and probably should be placed in the genus *Pseudocnus*.

Cucumaria salma is easily distinguished from the remaining three species *C. crax*, *C. curata*, and *C. vegae*; all of which are found on the Pacific coast of North America. *Cucumaria salma* is about 10 cm in length; has three or four stone canals; four Polian vesicles; is salmon colored; and

has distinct spicules. The latter three species range in size from 1.5–4 cm; have one stone canal; one or two Polian vesicles; and are gray or brown in color (Table 1).

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A NEW SPECIES OF SEA OTTER FROM THE LATE PLEISTOCENE OF NORTHWESTERN CALIFORNIA

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ABSTRACT: A new species of sea otter is described from a Late Pleistocene marine deposit, Humboldt County, California. The species is closely related to the living sea otter, *Enhydra lutris*, but differs significantly in possessing larger P_3 , P_4 , M_1 , and presumably M_2 , shorter ascending ramus with respect to total length of mandible, and a more simply formed angle. Proportions of the mandible suggest that the skull of the new species may have been slightly longer and lower than that of *E. lutris*. No special affinities with particular living populations of *E. lutris* are recognized.

The prior fossil records of sea otter in the north-eastern Pacific has, with but one exception, included only postcranial elements and all fossil discoveries have occurred in two widely separated areas, Oregon and southern California. The Oregon record consists only of a right femur of Pleistocene age from the Elk River Formation

(Leffler, 1964). The southern California records (Mitchell, 1966) include a lower, deciduous tooth of Early Pleistocene age from the Timm's Point Silt, a right humerus of Late Pleistocene age from

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